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ABSTRACT

More effective use of diminishing resources was needed to provide the best possible services at the University of Guelph (Ontario, Canada) library. This required the improved decision-making processes of a Library Management Information System (LMIS) to provide systematic information analysis. An information flow model was created, and an extensive system was set up to collect data both manually and through the use of computerized systems. The ongoing system will provide data on use, circulation, traffic patterns, interlibrary loans, surveys, searches, acquisitions, cataloging, and financial and business office activities. (LS)

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A MANAGEMENT INFORMATION SYSTEM IN A LIBRARY ENVIRONMENT

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I. Introduction.

As a service organization striving to meet the needs of a university community, the University of Guelph Library is constantly reviewing its priorities, objectives and services. Given the tighter financial climate in Ontario universities in the past few years, a prime requirement of Library management has been to determine the means of coping with increased user demands and service requirements with decreasing staff and proportionately less resources. The Library's staff, in the last two years, has effectively decreased by 6 per cent; while at the same time student enrollment has increased by 8 per cent, and measurable service loads and demands have increased approximately 20 per cent.

The Library provides services which are primarily related to the needs of undergraduate students, graduate students, and faculty or research staff. Primary services provided by the Library to the university community include:

Collection Services
Undergraduate:
- Basic collection building
- Reference collection
- Interdisciplinary areas
- Response to holds
- Monitor multiple copy needs

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Graduate and Faculty
(in addition to undergraduate services):
- Desiderata
- Search for special collections
- Acquisition of special collections

Circulation Services

Undergraduate:
- Regular loan
- Overdue notices, fines and adjustments
- Recalls
- Holds
- Missing book searches
- Reserve books
- Special indices
- Identification cards
- Film booking and renting
- Non-circulating material

Graduate and Faculty
(in addition to undergraduate services):
- Semester loan

Orientation Services

Undergraduate:
- Classroom lecture on broad collection use

Graduate and Faculty:
- Small seminars on specific discipline
- New faculty orientation

Interlibrary Loan

Graduate and Faculty:
- Verification, location, borrowing of material
- Charging for material borrowed

Reference and Information Services

Undergraduate:
- Response to specific questions
- One-to-one instruction in the use of specific resources

Graduate and Faculty
(in addition to undergraduate services):
- Special subject sheets

Access Services (Tools and Methods)

Undergraduate, Graduate and Faculty:
- Microform catalogues in author, title, subject or serial access
- Specialized microform cooperative university lists

In the University of Guelph Library, the main concern is to emphasize the University objective of primary service to the undergraduate. The expanded Library objectives are:

1) To select and acquire material consistent with the current and anticipated instructional and research needs of the users, within the limitation of available resources;

2) To organize and bring under bibliographic control the materials acquired;

3) To interpret the collection to the Library users, to assist them in utilizing the resources of the Library, and to provide access to needed information located elsewhere;

4) To make the collection available to users while at the same time preserving materials for the future;

5) To cooperate with other institutions for the effective utilization and rationalization of resources and for the advancement of scholarship and information transfer.

The need for a Library Management Information System can be seen from a sample of problems that face many library administrators.

1) If the university community changes in size and composition, what actions are necessary to meet new needs created by this change?

2) What effect would be manifested on the level of service offered if the library was allotted 20 per cent less in its overall budget?

3) What effect does a collective bargaining agreement have on the level of service if the staff hours are reduced from 37½ to 35, and a nine-day fortnight introduced for non-professional staff?

4) How should funds be allocated among different collections? What is the optimum mix of titles, copies and periodical subscriptions within a collection?

5) How should staff be deployed to meet changing levels and patterns of use?

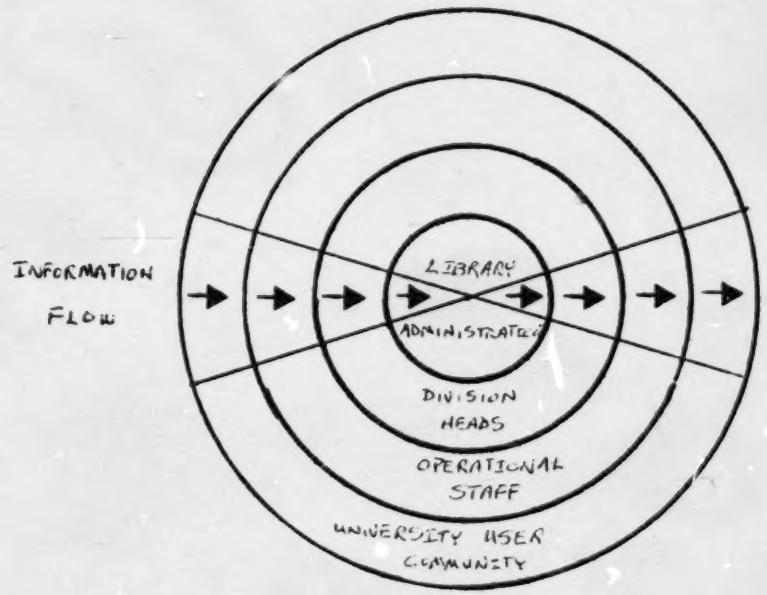
6) The need to establish work standards.

II. A Library Management Information System.

Development and implementation of a Library Management Information System (LMIS) has enhanced the likelihood that effective decisions and plans can be made regarding the allocation and utilization of scarce resources available to the Library. The LMIS has allowed the means to relate service outputs with associated resource inputs. This has provided senior Library staff with a basis for comparing the advantages and disadvantages of alternative courses of action, and justifying expenditures and requests for funds. The larger selection of available alternatives facilitates the making of decisions consistent with the objectives of the Library, thus, increasing the overall effectiveness of the library in meeting the needs of the university community.

Within the University of Guelph Library, as in most university or research library systems, there are four levels of information aggregation and dissemination: Library Administration; Division Heads; operational staff; and the university user community. Feedback must be derived from the university community on policies instituted in the Library to effectively control and enhance the fulfillment of user needs. Figure I illustrates this relationship.

Figure I. Levels of Information



The LMIS has short, medium, and long term implications in relation to Library objectives. In the short term, operational data is supplied to Division Heads and in an aggregated form to Library Administration. The medium term implications reflect summarized historical data for a limited number of years used by Library Administration for observation, comparison, and planning. For the long term, an integral data base of information will be accummulated, from which research requirements of the Division Heads and Library Administration will be served.

For the past eight years the Library has been collecting information and statistical data that relate to the operation of individual departments, divisions, and technical processing areas through manual and computer systems. In an aggregated form, this information has been useful for work measurement and planning future services or alterations in present services. The separate data bases comprising our information systems are being integrated to provide statistical data for computer modeling and simulation, personnel scheduling, expanded work measurement, planning to determine early warning signals for peak periods in divisions under particular pressure, and other research requirements.

All Divisions and areas of the Library system contribute to the information gathering through manual and/or computer data entry systems. This input is handled in numerous ways: Optical Mark Recognition and keypunched cards, on-line input via TSO to the University's central IBM 370/155, on-line data entry and verification to the Library's GEAC 500/800 minicomputer. Considerable data are acquired as a by-product directly from various operational computer systems: Circulation, Reserve Books, etc. The use of hand-held data entry devices (similar to pocket calculators), interfaced to the mimicomputer, is being considered in some areas. A substantial number of systems are using the capabilities of software packages such as SPSS and APL to massage the input and produce relevant statistical reports.

The operational areas of most concern are: Material Resources Use; Monograph and Government Documents Circulation; Patron Traffic Patterns; Interlibrary Loans; Public Contact Survey; Bibliographic Searching; Monograph and Serial Acquisition; Monograph and Serial Cataloguing, and Government Documents Coding; Film Use; Reserve Circulation; and a variety of Financial Systems.

III. Components of the Guelph Library Management Information System.

A. Material Resources Use.

Statistical information describing the shelving of library material is summarized on worksheets, and transferred to OMR cards for entry to the Shelving Statistics System. Material use is aggregated weekly by material type, division, and source code.

B. Monograph and Government Documents Circulation.

The Monograph Circulation System has been capturing data from a computerized charging/discharging and reporting system since 1968. Monograph use is summarized daily and weekly by division, loan type, and borrower type; and yearly by call number and number of loans.

Material from the Government Documents Centre presently circulates in a manual system but will be integrated into an overall automated circulation system in the future. This will provide data on the documents collection similar to those presently obtained for monographs.

C. Patron Traffic Patterns.

One measure of Library use is determined by collecting counts of patrons from turnstiles situated at the library entrance. This information is aggregated weekly and daily by aisle number and time of day.

D. Interlibrary Loan.

Inter-university use data are collected manually by the Interlibrary Loan Office and aggregated monthly to provide information on material movement by lending/borrowing institution and form type.

E. Public Contact Survey.

The Public Contact Survey System is provided data from all service points in the library. The collected data show summarized statistics weekly and daily by division, question type, and time of day.

F. Bibliographic Searching.

Statistics related to Bibliographic Searching are collected by a computerized system which monitors the flow of Purchase Request forms for library materials. The data is aggregated by year and month for all university departments, type of purchase request, and action taken.

G. Monograph and Serial Acquisition.

The Monograph Acquisition System captures information from a computerized and manual order entry system. Data on monographs ordered and received are aggregated yearly and monthly by university department budget.

The Serial Acquisition System collects data from a manual system which keeps track by month of the total amounts on order and received, and the amount ordered and received for the current month for each university department.

H. Monograph and Serial Cataloguing, Government Documents Coding.

Monograph Cataloguing Statistics are summarized monthly and yearly from the computerized cataloguing system. This information reflects added titles, volumes, copies by location and material type.

The Serial Cataloguing System provides computer extracted statistics summarized monthly and yearly by added titles, and volumes by form type; in addition to the number of detail holdings per title.

The Government Documents Coding System provides computer extracted statistics aggregated weekly and monthly on documents and volumes added, as well as document type.

I. Film Use.

Film usage is determined by a presently manual statistical system which displays monthly aggregated information for inter-university use by media and loan type; and intra-university use by material movement; institution, and the number loaned, borrowed, rented and cancelled.

J. Reserve Circulation.

The Reserve Circulation System accepts data through coded cards bearing the number of times a Reserve Publication was used during a semester. The statistics collected are aggregated twice a semester to illustrate use of each item arranged by professor, department and course number.

K. Library Business Office.

Through a manual data collection system, the Library Business Office accumulates data for monthly aggregation on a variety of financial areas: commitment and allocations spending by university department; usage of photocopiers and microfilm reader/printers; library revenue; operating and machine supplies; stock of essential forms and equipment by budget category.

In addition, through a number of special, ad hoc data collection and survey projects, information has been accumulated to determine user needs, periodical use, and stocktaking. Most of these are one-time systems designed to illicit instant feedback from the university community.

These integrated systems make up the Guelph LMIS and will form the data base for meeting the future planning requirements of the Library.

IV. Conclusion.

The desire to improve the decision making process through systematic information analysis led to the decision to build an integrated LMIS at the University of Guelph. The information provided by the Guelph LMIS has facilitated the efforts to apply professional management methods to library decision making. The LMIS is designed to be adaptive to advances in library technology and responsive to the changing needs of the users.

The experience at Guelph confirms that the effort required to initiate and implement a LMIS is much greater than the effort required to maintain and operate it. The difficulty lies in establishing that there are long term benefits to be gained for the expenditure of short term operating costs to build the system. This concerted effort to provide the library's administration with a coordinated and quantitative overview of the problems and alternatives confronting the library can be of considerable benefit in improving planning and decisions. The results will be better use of scarce financial and human resources in the face of increasing demands for greater library service.

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VI. Glossary.

1. Monograph:	a book in any form: bound, paperback, microfilm, etc.
2. Serial:	a publication in any form issued one part at a time - daily, weekly, monthly, annually, etc.
3. Circulation:	charging, and discharging of library material generally for use outside the library.
4. Call number:	Library of Congress alpha/numerical classification for library material.
5. Reserve material:	library material allowed to circulate only in the library but cannot leave the building.
6. Document coding number:	Guelph Government Documents classification number for document material.
7. Hold:	request to Circulation Service to hold material when it is returned, before it is re-shelved.